United States Patent [19]

Biggs

[11] **4,219,036**

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[54] **PORTABLE SHELTER**

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[51] **Int. Cl.**[2] **A45F 1/16**

[52] **U.S. Cl.** ..... **135/1 R;** 135/14 D

[58] **Field of Search** ..... 135/1 R, 3 R, 4 R, 14 D, 135/14 R, 1 C, 1 D; 52/65, 63

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Primary Examiner—Reinaldo P. Machado
Attorney, Agent, or Firm—Roger A. Clapp

[57] **ABSTRACT**

A six sided shelter unit is disclosed in which a fabric covering is disposed around a support assembly and held in place by a top assembly. The support assembly comprises ribs and support legs which cooperate to shape the fabric into a suitable shelter and the top assembly includes a hinge assembly which allows the shelter to be opened by way of two pivoting gate legs. The two gate legs are constructed to swing back over other support ribs and legs so as to provide an especially wide opening.

10 Claims, 10 Drawing Figures

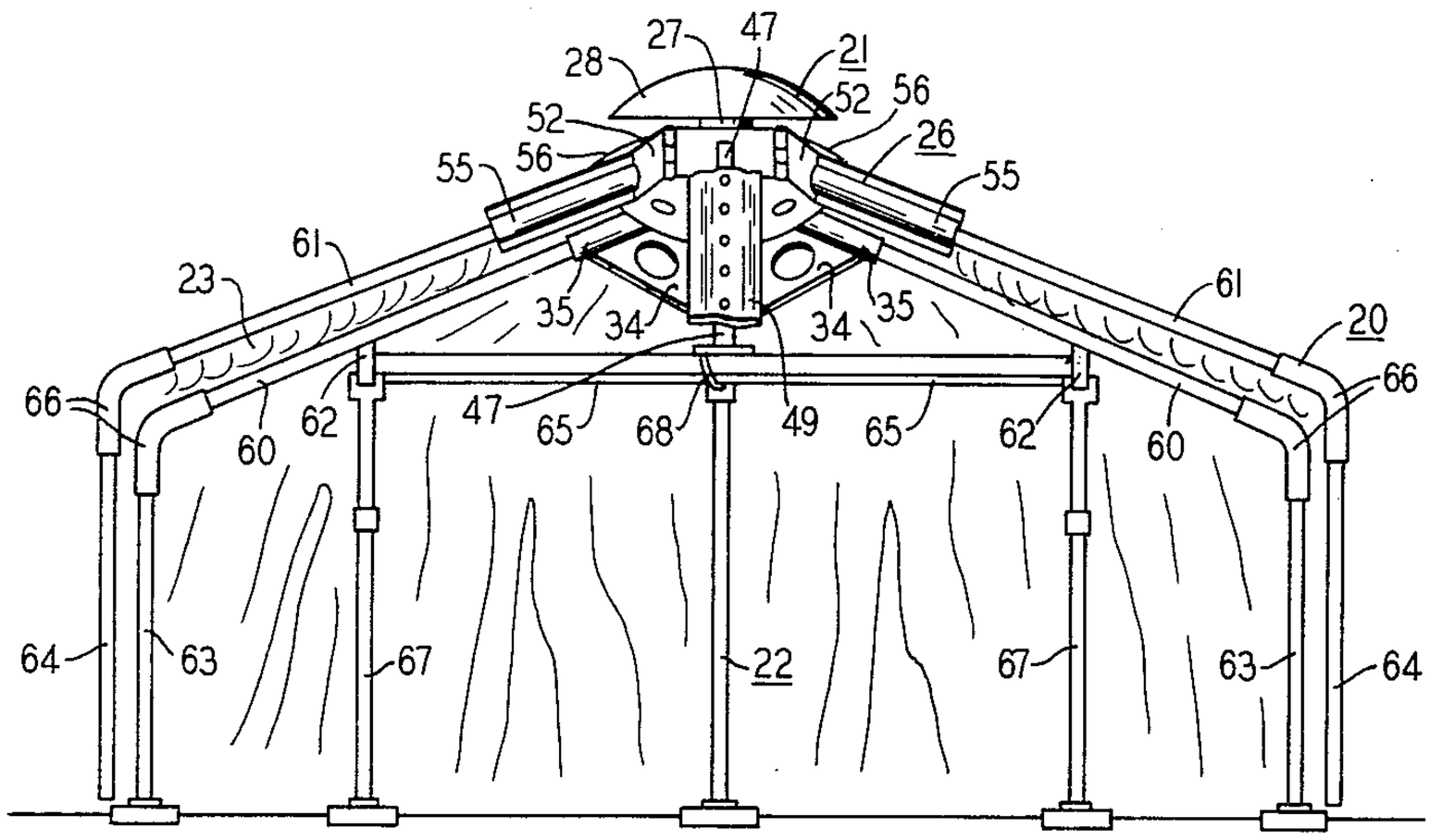

FIG. 1

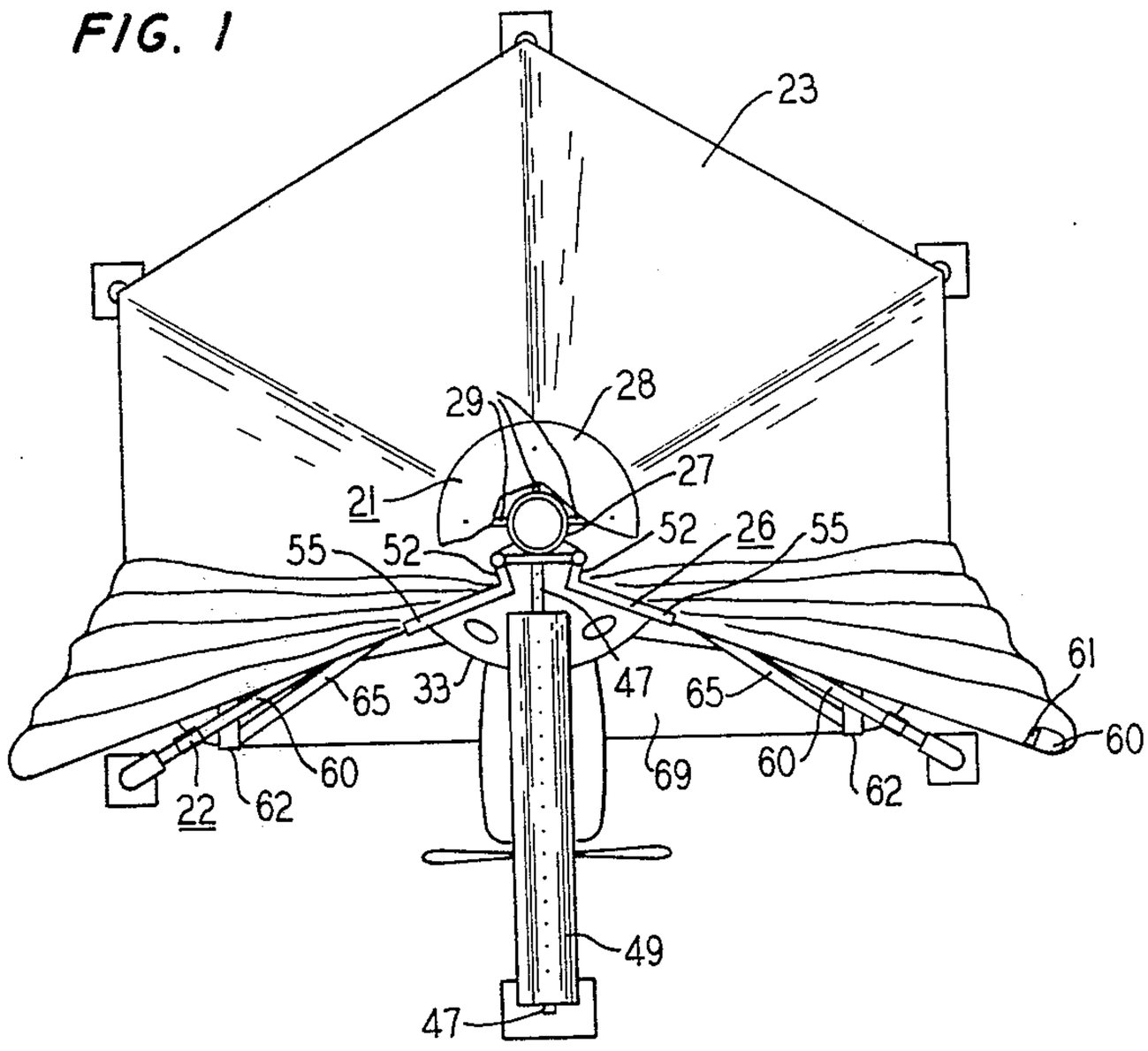
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FIG. 4

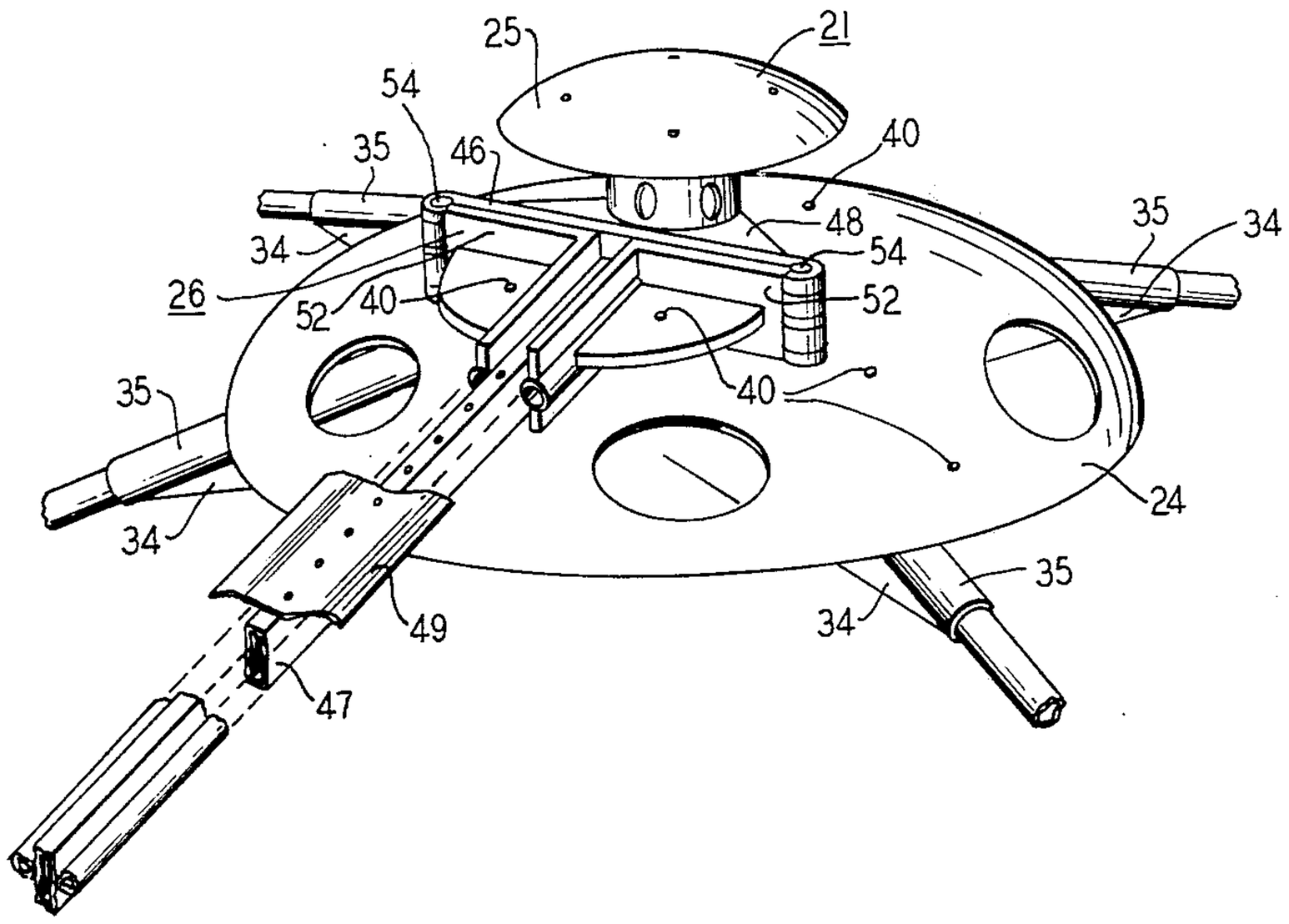
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FIG. 2

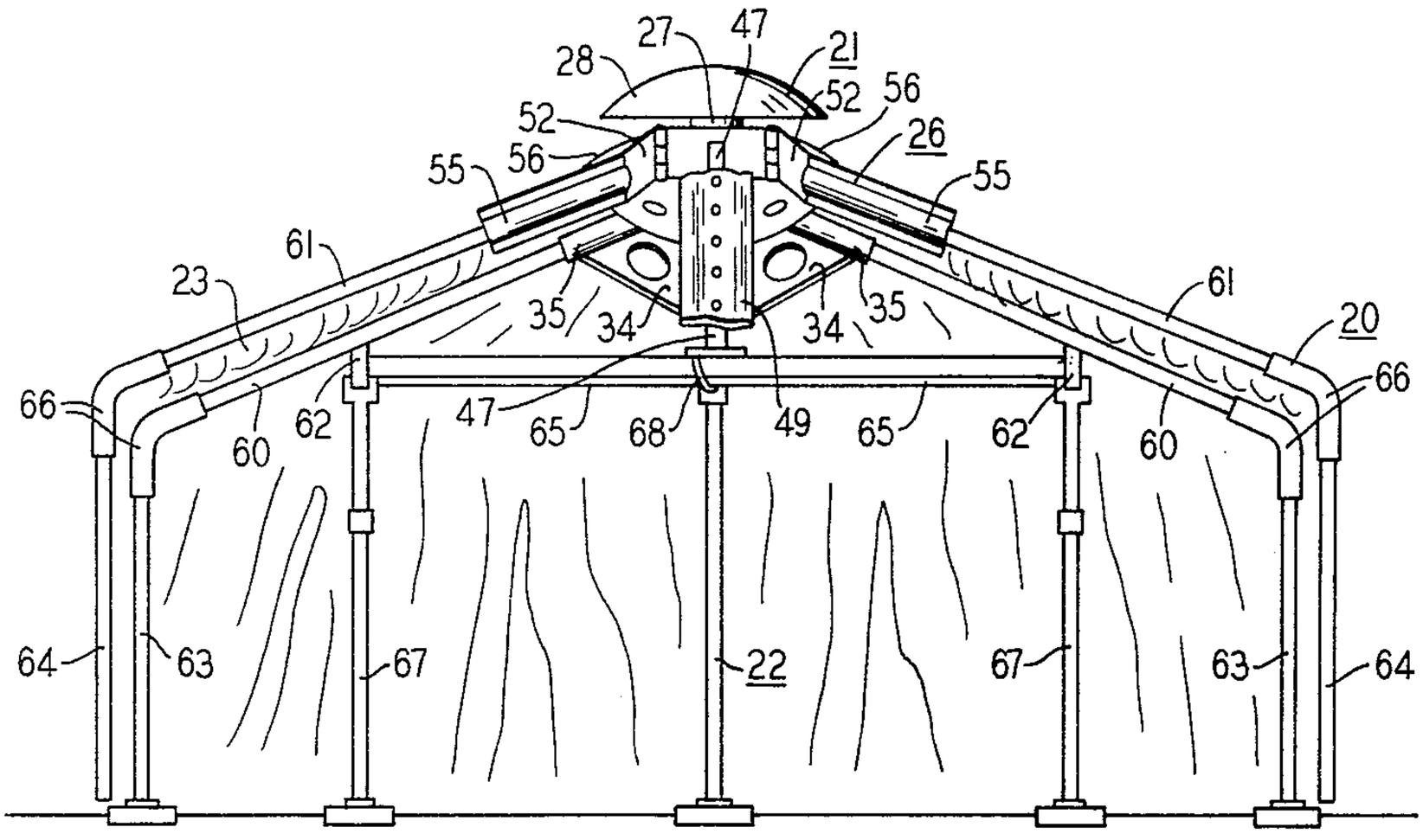
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FIG. 3

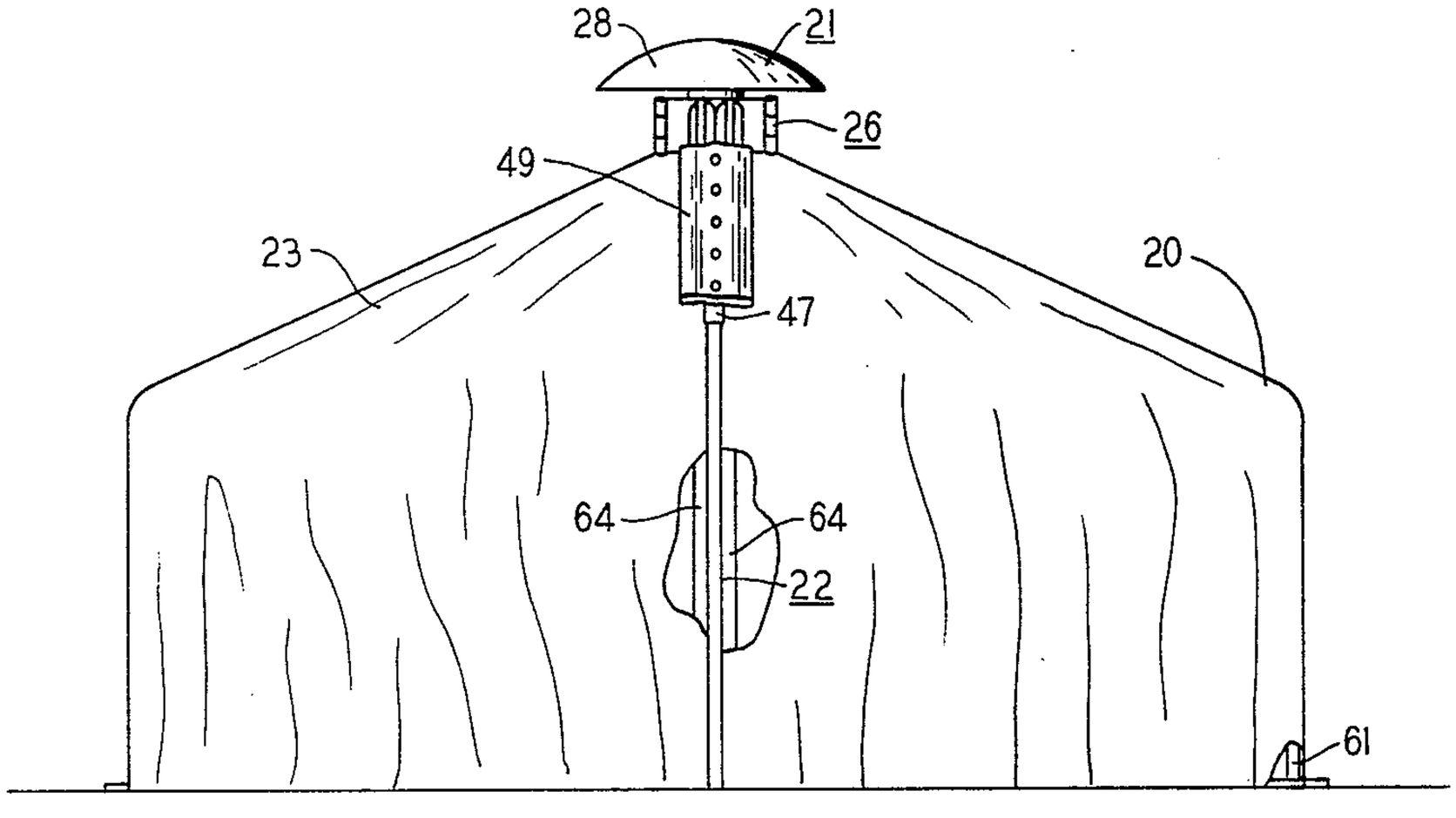
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FIG. 5

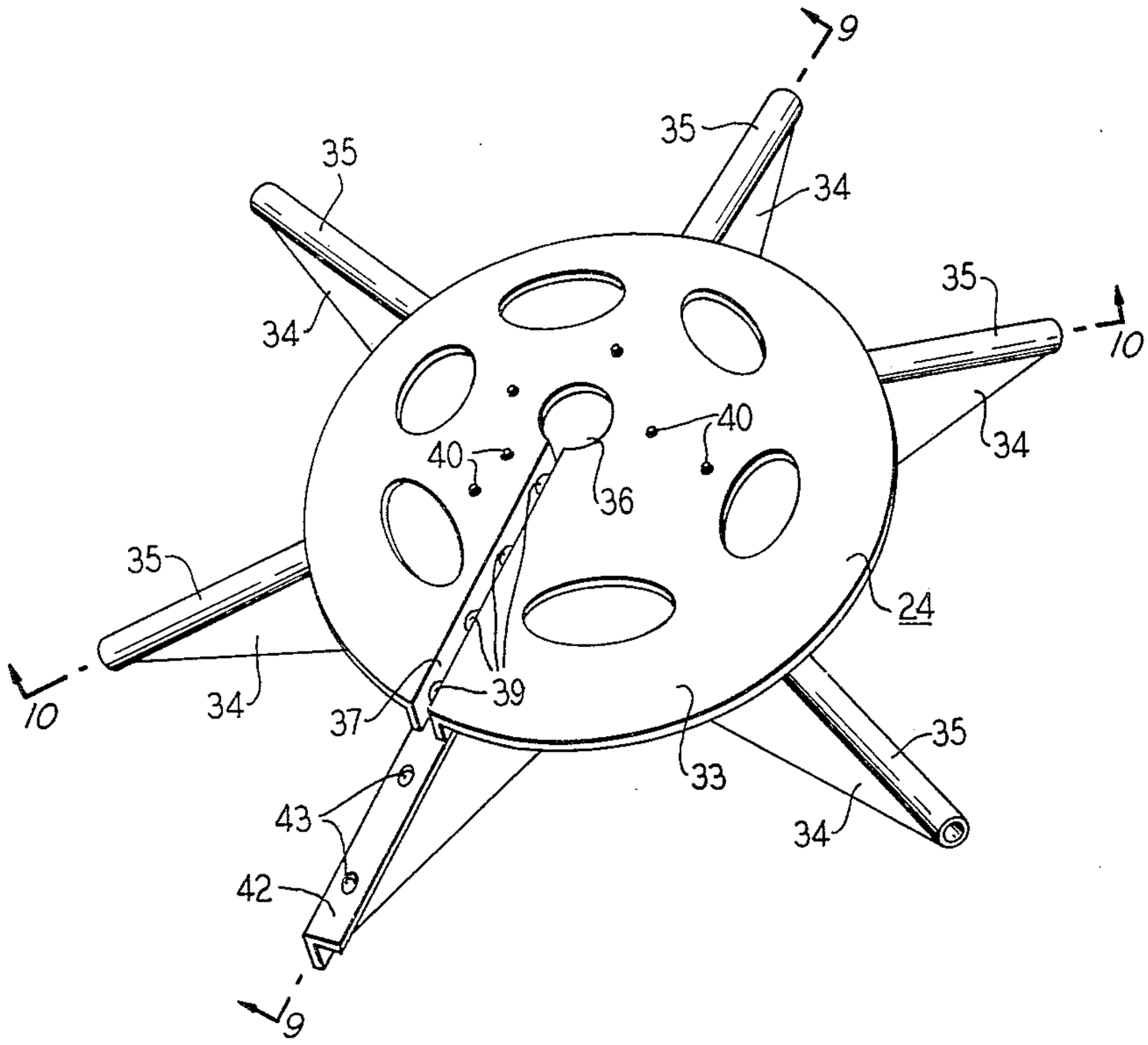
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FIG. 6

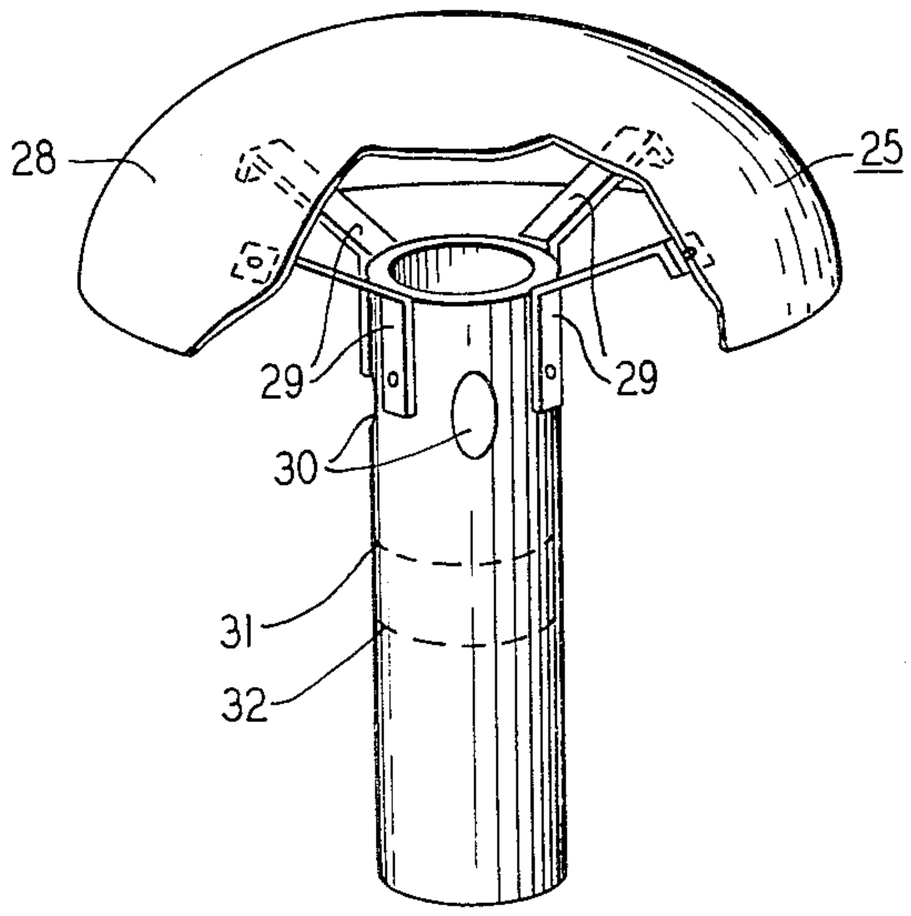
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FIG. 7

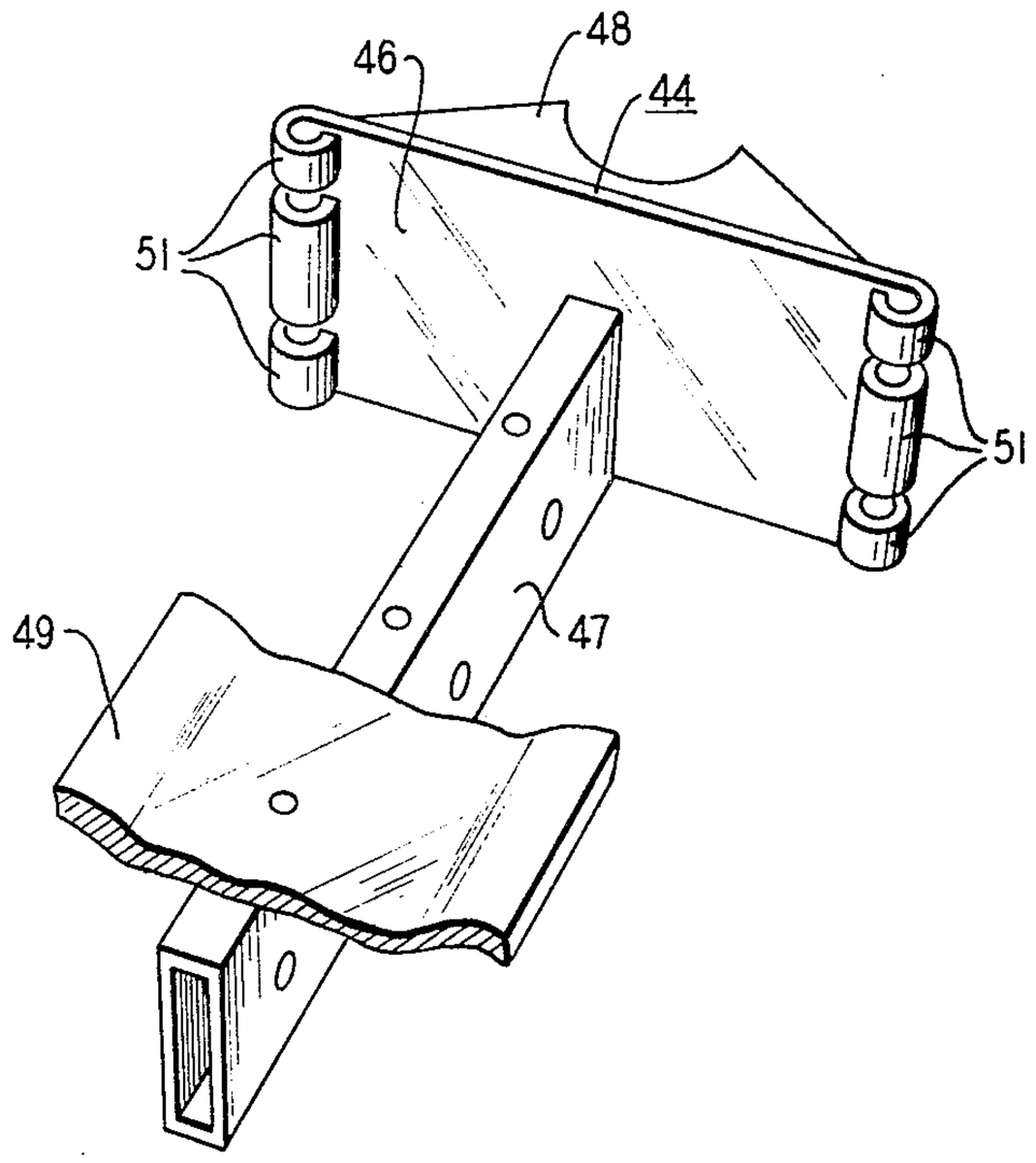


FIG. 8

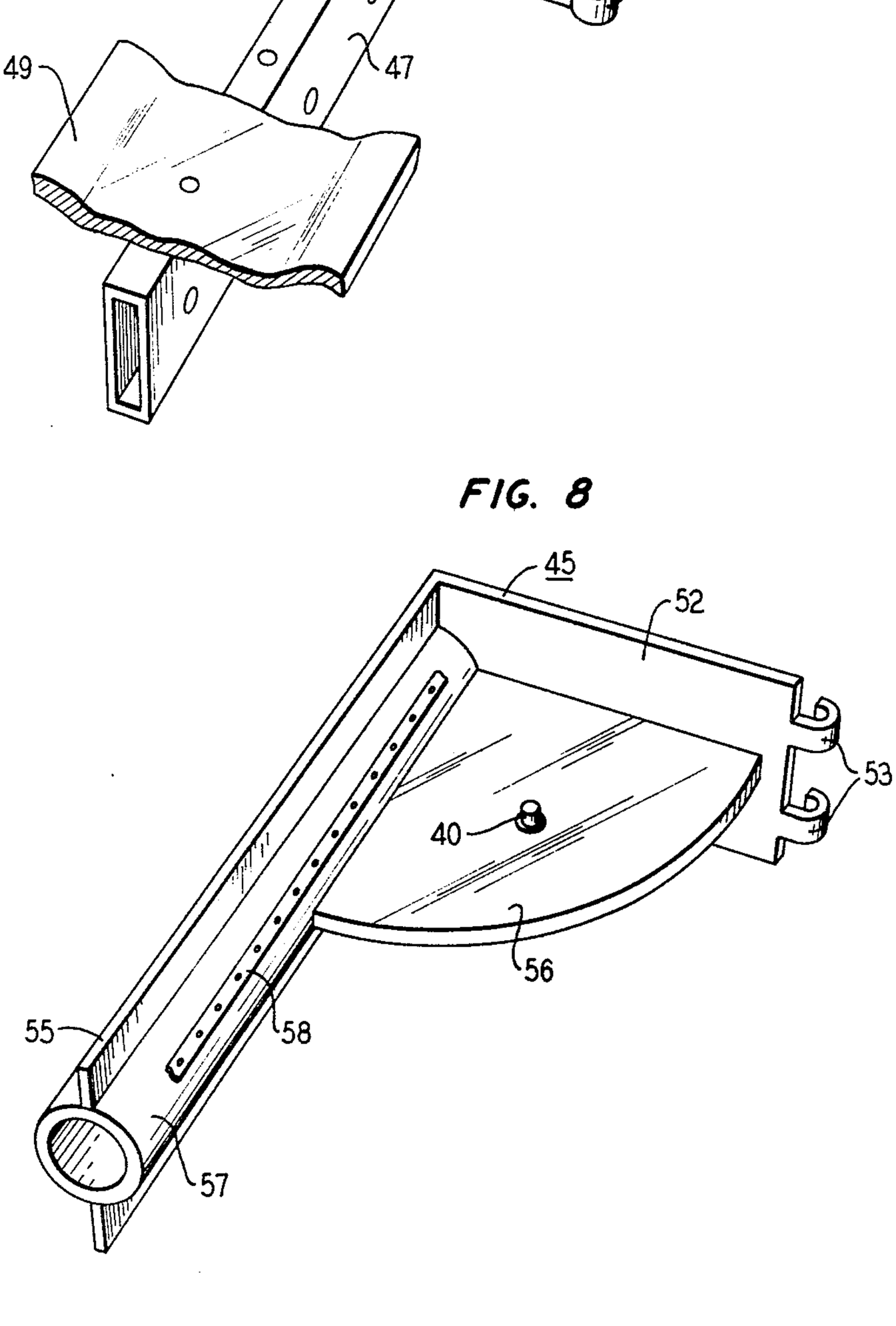


FIG. 9

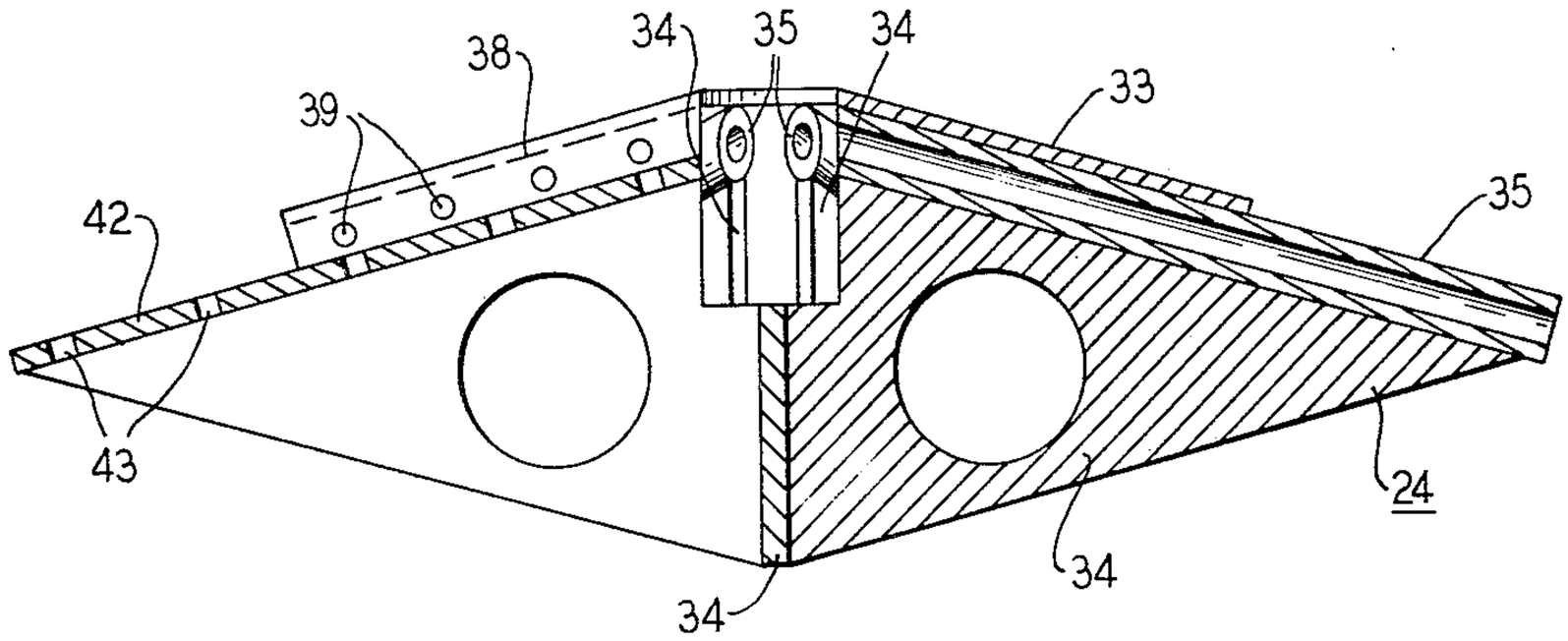
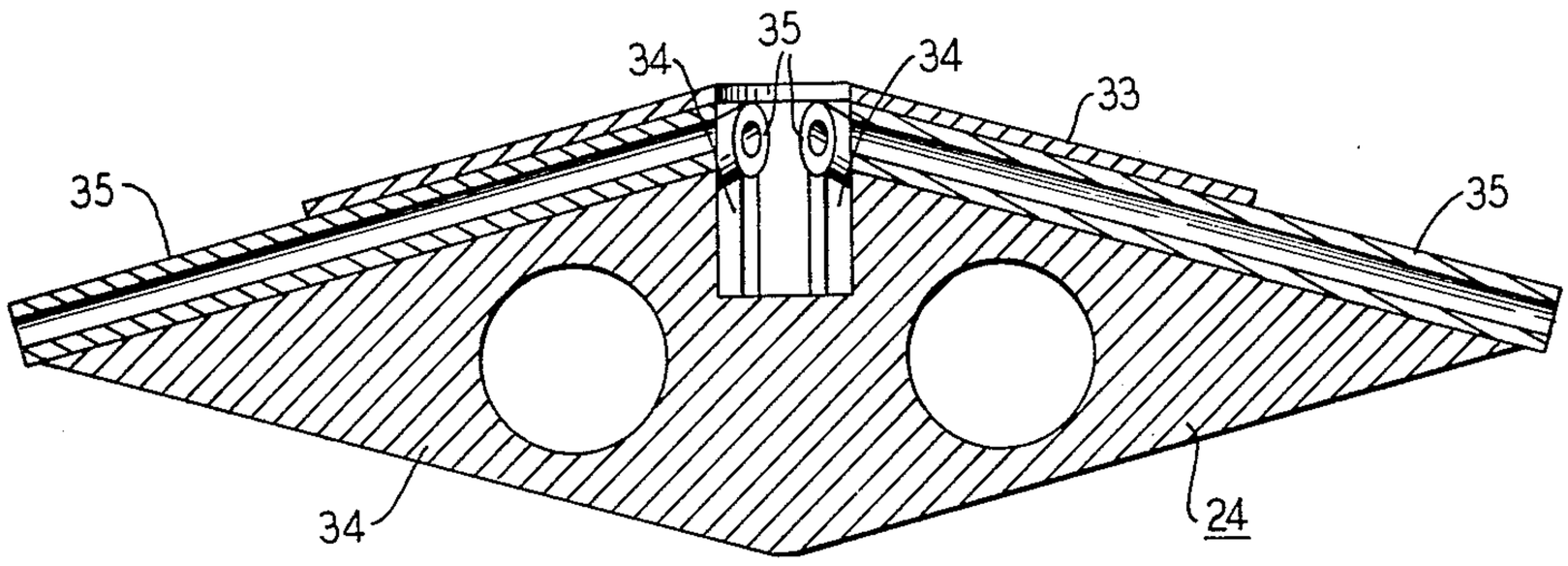


FIG. 10



PORTABLE SHELTER

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention pertains to large temporary shelters and pertains to those in which a light frame supports a fabric covering.

2. Description of the Prior Art

Fabric covered temporary structures are generally well known such as tents and the like. Heretofore, however, tents big enough to shelter large equipment such as airplanes or motor vehicles have been costly and difficult to erect.

Accordingly, an object of this invention is to achieve a fabric covered shelter which is inexpensive yet easy to erect and operate.

The type of equipment stored often poses difficulty in utilizing existing temporary shelters. Specifically, when a shelter is used to store an especially wide piece of equipment such as an airplane, it is difficult to open wide enough in order to enable easy ingress and egress.

Accordingly, another object of this invention is to achieve an easy to use, inexpensive fabric covered shelter which readily opens wide to accept bulky items for storage.

SUMMARY OF THE INVENTION

In accordance with the preferred embodiment of this invention, tubular legs and ribs cooperate with a unitary top assembly to achieve a temporary shelter which is inexpensive and easy to use.

In accordance with a feature of this invention, the ribs and legs terminate in a top structure which is hinged to cooperate with gate members adapted to swing open over adjacent rib and leg members to provide a wide opening shelter.

A better understanding of the foregoing objects and features of this invention will be facilitated by reference to the following detailed description and drawing.

Description of the Drawing

FIG. **1** is a plan view of a shelter unit constructed in accordance with this invention showing the gates in an open position.

FIG. **2** is an end elevation view of front of the shelter unit depicted in FIG. **1**.

FIG. **3** is an end elevation view of the front of the shelter unit depicted in FIG. **1** and shows the gates closed.

FIG. **4** is a perspective view of a top assembly made in accordance with this invention.

FIG. **5** is a perspective view of a cap unit incorporated in the top assembly illustrated in FIG. **4**.

FIG. **6** is a perspective view of a vent unit incorporated in the top assembly depicted in FIG. **4**.

FIG. **7** is a perspective view of a base unit used in a hinge assembly incorporated in the top assembly depicted in FIG. **4**.

FIG. **8** is a perspective view of a hinge unit used in the hinge assembly referred to in connection with the description of FIG. **7**.

FIG. **9** is an elevation view of the cap unit illustrated in FIG. **5** taken in section along the lines **9—9**.

FIG. **10** is an elevation view of the cap assembly illustrated in FIG. **5** taken in section along the lines **10—10**.

DETAILED DESCRIPTION OF THE INVENTION

Referring to FIGS. **2** and **3**, a shell **20** is disclosed which comprises a top assembly **21**, a support assembly **32** and a fabric **23** covering the support assembly **22**. The fabric **23** can be any light waterproof material such as canvas. In the embodiment depicted, the shell **20** is approximately 13 feet high and approximately 40 feet across its widest dimension, which, as shown in FIG. **1**, is advantageously a hexagon.

The top assembly **21** holds the upper portion of the support assembly **22** together and, as best seen in FIG. **4**, comprises a cap unit **24**, a vent unit **25** and a hinge assembly **26**. The vent unit **25** supports the cap unit **24** and hinge assembly **26** and, as best seen in FIG. **6**, comprises a cylinder **27**, a cover **28** and fingers **29** which mount the cover **28** on the cylinder **27**. The cylinder **27** is made of a strong and rigid material such as steel and is perforated with holes **30** to allow venting from inside the shelter **20**. When mounted, the cap unit **24** and hinge assembly **26** are disposed one above the other on the cylinder **27** as at the weld lines **31** and **32**.

As best seen in FIG. **5**, the cap unit comprises a dish shaped plate **33** which, as shown in FIGS. **9** and **10**, cooperates with webs **34** to bracket and hold in place five rib sockets **35**. The webs are made of steel and are apertured to reduce weight. Advantageously, the rib sockets **35** are hollow steel cylinders welded to the plate **23** and webs **34** for integral strength. As shown in FIG. **5**, the plate **33** has a center hole **36** and a slot **37** communicating between the center hole **36** and the perimeter of the plate **33**. As best seen in FIGS. **5** and **9**, the slot **37** is defined by the bent-over lips **38**. Both lips **38** include mounting holes **39** and the surface of the plate **33** includes fabric snaps **40**. A sixth web **41**, as shown in FIGS. **5** and **9**, having a lip **42** is rigidly mounted beneath the slot **37** as by welding to the other webs **34**. As best seen from FIG. **10**, all but two of the webs **34** are individual units welded to each other and the aforesaid two to form a unitary structure hollowed at the center to accept the cylinder **27** which is welded in place. As shown in FIGS. **5** and **9**, the lips **42** are perforated with mounting holes **43**. As shown in FIG. **4**, the cap unit **24** is mounted on the vent unit **25** at the weld line **32** where it is welded in place.

The hinge assembly **26**, as shown in FIGS. **7** and **8** comprises a base unit **44** and a hinge unit **45**. As best seen in FIG. **7**, the base unit **44** includes a base plate **46**, a channel arm **47**, a welding flange **48** and a water diverter **49**. The water diverter **49** drains water off the cap unit **24** and is attached to the channel arm **47** as by riveting or the like. The channel arm **47** is mounted as a cantilever with one end attached to the base plate **46** and the other end suspended. Support is supplied by bolts or rivots passing through the channel arm **47** and the lips **38** and **42**.

The base plate **46** terminates advantageously in three hinge loops **51** at one end and the welding flange **48** is rigidly attached thereto. The welding flange **48** is arced to fit around the cylinder **27** and is mounted on the cylinder **27** at the weld line **31** where, as can be seen from FIG. **1**, it is welded in place.

The hinge unit **45** comprises right and left hand pivot plates **52**. Each pivot plate **52** advantageously terminates at one end in two hinge loops **53** adapted to mesh with the three hinge loops **51** on the base plate to form a hinge when joined by hinge pin **54**. The other end of

each pivot plate **52** terminates in a flange plate **55** mounted at right angles thereto and depending downwardly therefrom at an appropriate angle. The pivot and flange plates are rigidly joined by a web **56** which advantageously includes a fabric snap **40** and is perforated to reduce weight. A gate socket **57** is rigidly attached to each flange plate **55** as by welding and may advantageously include a fabric clip **58**. Each gate socket **57** is advantageously a hollow steel cylinder.

As best seen in FIG. **2**, the support assembly **22** comprises five support ribs **60**, two gate ribs **61**, two brace bars **62**, five support legs **63**, two gate legs **64**, two struts **65**, seven connectors **66** and four base legs **67**. The two gate legs **64** are nominally located at a common point and cooperate with the five support legs to form a hexagon configuration when viewed from the top. The seven connectors **66** join the support legs **63** and the gate legs **64** to the support ribs **60** and gate ribs **61**, respectively. The ribs **60** and **61** are held in place by the rib sockets **35** and gate sockets **57**, respectively. Finally, the brace bars **62**, as best seen in FIG. **1**, extend between intermediate portions of two support ribs **60** with one at one side of the shelter **20** and the other on the other side of the shelter **20**. The brace bars **62**, although not shown, are centrally supported by a center leg and brace arm (not shown) to form a braced T configuration. Finally, the struts **65** extend from the corners of the brace bars **62** to criss-cross under the center of the shelter **20** where they are held in place by a U clamp **68**. The shelter **20** is completed by stretching the fabric **23** over the support ribs **60** and gate ribs **61** and snapping it in place with the snaps **40** and under the fabric clips **58**.

As shown in FIG. **2**, the length of the gate legs **64** is greater than the length of the support legs **63** and the flange plates **55** are disposed so that the gate ribs **61** are higher than the support ribs **60**. As a result, the gate legs **61** can alternate between the positions shown in FIGS. **1** and **3**. Thus, as the gate legs **61** swing from one position to the other, a wide opening is opened or closed. Consequently, the shelter **20** is particularly adapted to store wide vehicles such as an airplane **69** as shown in FIG. **1**.

As shown in FIG. **3**, each support leg can be attached to a concrete base or other anchor to keep the shelter **20** in place. It should be noted that the cover **28** extends over all of the hinge assembly and the space left uncovered by the fabric **23**. In addition, the water diverter **49** covers the opening between the gate ribs **62** when the shelter **20** is closed. As a result, all exposed parts are covered and the shelter **20** will not leak.

In summary, a fabric covered shelter has been disclosed and described which is simple to use, inexpensive and which readily opens wide to accomodate large equipment such as an airplane or the like. While only one embodiment has been disclosed, it will be understood that it is merely illustrative of the principles in the invention and it is anticipated that many other embodiments will readily occur to those skilled in the art which also will fall within the scope of the invention.

What I claim is:

1. A fabric covered shelter comprising:

a support assembly for accepting and holding said fabric covering in a predetermined shelter shape, said support assembly comprising a plurality of support and gate ribs, support and gate legs and connectors for joining said ribs and legs into pairs, all of said legs being disposed vertically to form a hexagon, said gate legs being longer than said support legs and said gate leg and gate rib pairs engaging ends of said fabric to form opposite sides of an opening in said shelter, and

a top unit comprising a vent unit, for venting said shelter a cap unit rigidly holding said support ribs in position, and a hinge unit for rigidly holding and reciprocating said gate ribs between two positions when actuated, said vent unit being disposed vertically with respect to said support assembly, said cap unit being rigidly attached to said vent unit and having a plurality of support rib sockets embracing said support ribs, and said hinge unit being rigidly attached to said vent unit above said cap unit and having a plurality of gate rib sockets for holding said gate ribs at a height above said support ribs whereby said gate ribs will pass over said support ribs when said hinge unit is actuated so as to form a wide opening in said shelter.

2. The combination in accordance with claim **1** wherein said connectors are bolted to said legs and ribs to form fabric supporting knees.

3. The combination in accordance with claim **1** wherein said hinge assembly comprises a base plate having hinges at its opposite ends and each of said hinges supports an inwardly directed hinge plate.

4. The combination in accordance with claim **3** wherein each of said hinge plates supports a gate rib socket extending outwardly at right angles to said base plate and adjacent to the other.

5. The combination in accordance with claim **4** wherein said cap unit includes a convex plate and said gate rib sockets depend downwardly from said hinge plates to lie substantially parallel to and above the surface of said plate.

6. The combination in accordance with claim **5** wherein said gate rib sockets are joined to said hinge plates by webs.

7. The combination in accordance with claim **5** wherein said convex plate is slotted to accept an outwardly directed channel member and is rigidly joined to said vent unit by a plurality of webs.

8. The combination in accordance with claim **7** wherein said channel member supports a water diverter.

9. The combination in accordance with claim **8** wherein said water diverter extends outwardly over said gate rib supports along the length of the entire channel member.

10. The combination in accordance with claim **1** wherein said vent unit includes a cover disposed over the top of said support assembly.

* * * * *